AMENDMENTS TO THE CLAIMS

The following is a complete, marked up listing of revised claims with a status identifier in parentheses, underlined text indicating insertions, and strikethrough and/or double-bracketed text indicating deletions.

Listing of the Claims

1. (Previously Presented) A method of creating images in computer tomography, comprising:

rotating at least one focus, to scan an object under examination with a beam originating from the at least one focus, relative to the object on at least one focal path running around the object, wherein a detector array including a plurality of distributed detector elements arranged in rows and lines and the detector array is adapted to detect rays of the beam and is adapted to supply initial data representing an attenuation of the rays passing through the object under examination;

filtering the initial data, wherein before the filtering, the initial data is obtained in fan beam geometry and rebinned into parallel beam geometry, and the filtering is carried out in a direction of a tangent to the at least one focal path belonging to the respective focal position;

backprojecting the filtered initial data, three-dimensionally, to produce at least one slice of a layer of the object having a layer thickness, the slice representing radiation absorption values of voxels belonging to the layer of the object, wherein, during the backprojection, the rays are weighted as a function of corresponding position in the beam with a weighting function representing a smooth function of the row number, the weighting function having a value of one for rays to at least one centrally located detector row and tending to zero for rays to detector rows at an edge of the detector rows.

2. (Cancelled)

3. (Original) The method as claimed in claim 1, wherein the beam includes an extent in the direction of rotation and an extent in the direction of the axis of rotation, and wherein arranged centrally in the beam, as based on the extent of the beam in the direction of the axis of rotation, are weighted to a relatively greater extent than the rays arranged close to the edge in the beam, as based on the extent of the beam in the direction of the axis of rotation.

4. (Original) The method as claimed in claim 1, wherein the rebinning includes,

converting, before filtering, the initial data obtained in fan beam geometry in the form of rays $P(\alpha,\beta,q)$ into parallel data present in parallel beam geometry in the form of rays $P(\theta,\beta,q)$ or $P(\theta,p,q)$, where

α is the focal angle

β is the fan angle

q is the row index of the detector system corresponding to the z coordinate,

$\theta = \alpha + \beta$ is the parallel fan angle,

$p = R_F \sin(\beta)$ is the parallel coordinate corresponding to the distance of the ray from the axis of rotation (system axis), and

R_F is the radius of the focal path.

5. (Original) The method as claimed in claim 4, wherein the backprojection of the parallel data is carried out and, in the course of the backprojection for each voxel

$V(x,y,z)$, for each $\theta \in [o,\pi]$ for the rays $P(\theta + k\pi, \tilde{\beta}, q)$ and $P(\theta + k\pi, \tilde{p}, q)$ whose projection along the system axis goes through (x,y), the sum

$$P_{x,y,z}(\theta) = \sum_k \sum_q W \cdot h\left(d_{x,y,z}\left(\theta + k\pi, \begin{Bmatrix}\tilde{p}\\ \tilde{\beta}\end{Bmatrix}, q\right)\right) \cdot P\left(\theta + k\pi, \begin{Bmatrix}\tilde{p}\\ \tilde{\beta}\end{Bmatrix}, q\right)$$

is formed, where

x,y,z are the coordinates of the respective voxel $V(x,y,z)$,

k is a whole number corresponding to the number of half revolutions of the focus included in the reconstruction,

$\tilde{p}$ are the parallel coordinates of those rays whose projections along the system axis run through the coordinates (x,y) of the respective voxel $V(x,y,z)$,

$\tilde{\beta}$ are the fan angles of those rays whose projections along the system axis run through the coordinates (x,y) of the respective voxel $V(x,y,z)$,

h is a weighting function determining the layer thickness of the layer of the object under examination represented in the slice produced,

d is a function which is equal to the distance of the respective ray from the corresponding voxel $V(x,y)$ or is dependent on the distance of the respective ray from the corresponding voxel $V(x,y)$, and

W represents a weighting function which weights rays with a large parallel fan angle θ less than rays with a small parallel fan angle θ.

6. (Original) The method as claimed in claim 5, wherein, during the backprojection of the parallel data, the sum

$$H = \sum_{k}\sum_{q} W \cdot h \cdot \left(d_{x,y,z}\left(\theta + k\pi, \begin{Bmatrix} \tilde{p} \\ \tilde{\beta} \end{Bmatrix}, q \right) \right)$$

normalized to the sum H of the weights h

$$P_{x,y,z}(\theta) = \frac{1}{H}\sum_{k}\sum_{q} W \cdot h\left(d_{x,y,z}\left(\theta + k\pi, \begin{Bmatrix} \tilde{p} \\ \tilde{\beta} \end{Bmatrix}, q \right) \right) \cdot P\left(\theta + k\pi, \begin{Bmatrix} \tilde{p} \\ \tilde{\beta} \end{Bmatrix}, q \right)$$

is formed.

7. - 10. (Cancelled)

11. (Original) The method as claimed in claim 1, wherein the focal path is a circular path.

12. (Original) The method as claimed in claim 1, wherein the focal path is a spiral path which is brought about by the focus being moved about the system axis on a circular path and, at the same time, a relative movement between focus and object under examination in the direction of the system axis taking place.

13. (Cancelled)

14. (Previously Presented) A computed tomography (CT) device for scanning an object under examination, comprising:

means for scanning the object, including at least one focus from which a beam originates;

a detector array including a plurality of distributed detector elements arranged in rows and lines, wherein the at least one focus is movable relative to the object on at least one focal path running around the object and wherein the detector array is adapted to supply detected data representing an attenuation of the rays passing through the object, the detected data configured to be obtained in fan beam geometry and rebinned into parallel beam geometry;

means for filtering the detected data, the means for filtering being configured to carryout filtering in the direction of a tangent to the at least one focal path belonging to the respective focal position;

means for backprojecting the filtered data, three-dimensionally, to produce at least one slice of a layer of the object having a layer thickness, the slice representing radiation absorption values of voxels belonging to the layer, wherein, during the backprojection, the rays are weighted as a function of corresponding position in the beam, with a weighting function representing a smooth function of the row number, the weighting function having a value of one for rays to at least one centrally located detector row and tending to zero for rays to detector rows at an edge of the detector rows; and

means for collecting the data.

15. (Previously Presented) The CT device as claimed in claim 14, wherein at least one of the means for scanning, the means for filtering and the means for backprojecting is at least partly implemented by at least one of programs and program modules.

16. (Cancelled)

17. (Original) The method as claimed in claim 6, wherein the weighting function represents a function of the parallel fan angle with $W(\theta+k\pi)$.

18. (Original) The method as claimed in claim 5, wherein the detector array includes detector elements arranged in the manner of rows, and the weighting function represents a function of the row number $W(q)$.

19. (Original) The method as claimed in claim 1, wherein the detector elements on the detector array are arranged distributed in the manner of a matrix.

20. (Original) A computer-readable medium comprising computer executable instructions configured to cause a computer to perform the method of claim 1.

21. (Cancelled)

22. (Cancelled)

23. (Original) A computer-readable medium having code portions embodied thereon that, when read by a processor, cause said processor to perform the method of claim 1.

24. (Cancelled)